



FRIEDRICH

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# Endeavor™ Line K-Series Heat Pumps



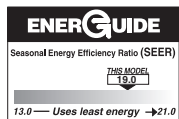
## FRP18AZ

Cooling Efficiencies up to: 20.0 SEER2/12.5 EER2

Heating Efficiency: 8.5 HSPF2

Nominal Sizes: 2 to 5 Ton [7.0 to 17.6 kW]

Cooling Capacities 22.8 to 55.0 kBTU [6.7 to 16.1 kW]



† A.F.U.E. (Annual Fuel Utilization Efficiency) calculated in accordance with Department of Energy test procedures.

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***\*Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet Energy Star. Ask your Contractor for details or visit [www.energystar.gov](http://www.energystar.gov).***

## Table of Contents

Features & Benefits .....	3
Model Number Identification .....	4
General Data/Electrical Data .....	5
Accessories .....	6
Unit Dimensions .....	7
Clearances .....	8
Control Wiring .....	9
Refrigerant Line Size Information .....	10-11
Performance Data .....	12
Smart Home Systems .....	13
Limited Warranty .....	16

## Features and Benefits

- **EcoNet® Enabled:** Automatic system configuration and optimization
- **PlusOne® Diagnostics & Bluetooth®<sup>1</sup> Connectivity:** With the Friedrich® Contractor & EcoNet® Apps, built-in technology makes advanced set-up, monitoring, troubleshooting, and repairing the product easier than ever before
- **Variable Speed Scroll Compressor & Inverter Drive:**
  - Features variable speed operation from 40 to 100% capacity with the EcoNet® Smart Thermostat
  - Offers overdrive capability up to 115% to maintain performance in extreme conditions
  - Provides precise temperature control, advanced humidity control and greater efficiency
- **Brushless DC Condenser Motors (BLDC):** Enhances reliability and allows for easier serviceability
- **Swept Wing Fan Technology:** Features quieter operation and improved unit acoustics

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# Heat Pumps

<u>FR</u>	<u>P</u>	<u>18</u>	<u>A</u>	<u>Z</u>	<u>24</u>	<u>A</u>	<u>J</u>	<u>V</u>	<u>N</u>	<u>A</u>
Brand	Product Category	SEER2	Region	Refrigerant	Capacity	Major Series	Voltage	Type	Controls	Minor Series
FR - Friedrich®	P - Heat Pump	18 - 18 SEER2	A - All Regions	Z - R-410A	24 - 24,000 [7.03 kW] 36 - 36,000 [10.55 kW] 48 - 48,000 [14.07 kW] 60 - 60,000 [17.58 kW]	A - 1st Design	J - 208/230/1/60	V - Fully Variable	C - Communicating	A - 1st Design

[ ] Designates Metric Conversions

AVAILABLE MODELS	DESCRIPTION
FRP18AZ24AJVCA	Endeavor™ Line <i>K-Series</i> 2 ton EcoNet® Enabled Inverter Driven Variable Speed iM Heat Pump - 208/230/1/60
FRP18AZ36AJVCA	Endeavor™ Line <i>K-Series</i> 3 ton EcoNet® Enabled Inverter Driven Variable Speed iM Heat Pump - 208/230/1/60
FRP18AZ48AJVCA	Endeavor™ Line <i>K-Series</i> 4 ton EcoNet® Enabled Inverter Driven Variable Speed iM Heat Pump - 208/230/1/60
FRP18AZ60AJVCA	Endeavor™ Line <i>K-Series</i> 5 ton EcoNet® Enabled Inverter Driven Variable Speed iM Heat Pump - 208/230/1/60

STANDARD EQUIPMENT
R-410A Refrigerant
EcoNet® Enabled
Variable Speed Compressor
Compressor Sound Blanket
Variable speed outdoor fan motor
Swept wing fan blade
Field Installed Filter Drier
Front Seating Service Valves
Internal Pressure Relief Valve
Internal Thermal Overload
Low Ambient capability
3–4–5 Expanded Valve Space
Composite Basepan
1" Screw Control Box Access
Quick release louver panel design
No fasteners to remove along bottom
Optimized Venturi Airflow
Single row condenser coil
Powder coated paint
Rust resistant screws
QR code
External gauge ports
Service trays

<b>General Data</b>				
<b>GENERAL DATA</b>				
<b>MODEL NO.</b>	<b>FRP18AZ24AJVCA</b>	<b>FRP18AZ36AJVCA</b>	<b>FRP18AZ48AJVCA</b>	<b>FRP18AZ60AJVCA</b>
<b>Nominal Tonnage</b>	2.0	3.0	4.0	5.0
<b>Valve Connections</b>				
Liquid Line O.D. – in.	3/8	3/8	3/8	3/8
Suction Line O.D. – in.	3/4	3/4	7/8	7/8
<b>Refrigerant (R410A) furnished oz.<sup>1</sup></b>	210	212	222	252
<b>Compressor Type</b>	Scroll			
<b>Outdoor Coil</b>				
Net face area – Outer Coil	28.3	32.5	32.5	32.5
Net face area – Inner Coil	—	—	—	—
Tube diameter – in.	0.375	0.375	0.375	0.375
Number of rows	1	1	1	1
Fins per inch	20	20	20	20
<b>Outdoor Fan</b>				
Diameter – in.	26	24	24	26
Number of blades	3	3	3	3
Motor hp	1/2	1/2	1/2	1/2
<b>Shipping weight – lbs.</b>	282	306	306	309
<b>Operating weight – lbs.</b>	278	298	298	301

<b>Electrical Data</b>				
<b>Line Voltage Data (Volts-Phase-Hz)</b>	<b>208/230-1-60</b>	<b>208/230-1-60</b>	<b>208/230-1-60</b>	<b>208/230-1-60</b>
<b>Maximum overcurrent protection (amps)<sup>2</sup></b>	30	50	60	60
<b>Minimum circuit ampacity<sup>3</sup></b>	22	32	37	42
<b>Compressor</b>				
Rated load amps	15.4	24	28.1	31.7
Locked rotor amps	35	50	50	50

<sup>1</sup>Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the installation instructions for information about set length and additional refrigerant charge required.

<sup>2</sup>HACR type circuit breaker or fuse.

<sup>3</sup>Refer to National Electrical Code manual to determine wire, fuse, and disconnect size requirements.

## Accessories

MODEL NO.	FRP2024	FRP2036	FRP2048	FRP2060
EcoNet® Smart Thermostat	CETST800SYS	CETST800SYS	CETST800SYS	CETST800SYS
Heat Pump Riser 6 in.	686020	686020	686020	686020
Supply/Return Sensor	RXHT-A02	RXHT-A02	RXHT-A02	RXHT-A02

## Weighted Sound Power Level (dBA)

FRP18AZ SOUND POWER LEVEL										
MODEL	SOUND POWER LEVEL [DB(A)] LOW SPEED/ HIGH SPEED	FULL OCTAVE LINEAR SOUND POWER LEVEL DB - CENTER FREQUENCY - HZ								SOUND POWER LEVEL [DB(A)] WITH SOUND BLANKET
		125	250	500	1000	2000	4000	6300	8000	
FRP18AZ24AJVCA	59	34.8	39.7	50.8	48.4	42.5	40.2	34.6	34.5	Sound Blankets – Standard
	69	45.0	50.6	59.5	57.9	56.6	49.5	45.7	44.8	
FRP18AZ36AJVCA	60	33.6	38.3	57.6	48.2	43.6	39.7	43.0	39.3	
	70	44.8	51.1	60.8	60.1	56.2	50.3	49.9	48.3	
FRP18AZ48AJVCA	59	34.0	38.9	52.3	48.0	43.5	39.8	42.2	37.3	
	73	48.5	54.4	65.4	63.1	58.0	55.0	53.3	51.6	
FRP18AZ60AJVCA	58	36.0	39.3	51.4	46.2	43.8	43.0	41.3	40.2	
	73	49.8	54.0	68.0	59.2	55.9	53.7	50.7	49.3	

NOTE: Tested in accordance with AHRI Standard 270-08 (not listed in AHRI)

## Unit Dimensions

MODEL NO.	OPERATING						SHIPPING					
	H (Height)		L (Length)		W (Width)		H (Height)		L (Length)		W (Width)	
	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm
FRP18AZ24AJVCA	45.17	1147	36.13	918	36.13	918	48.18	1224	39.37	1000	39.64	1007
FRP18AZ36AJVCA	51.17	1300	36.13	918	36.13	918	53.56	1360	39.37	1000	39.64	1007
FRP18AZ48AJVCA	51.17	1300	36.13	918	36.13	918	53.56	1360	39.37	1000	39.64	1007
FRP18AZ60AJVCA	51.17	1300	36.13	918	36.13	918	53.56	1360	39.37	1000	39.64	1007

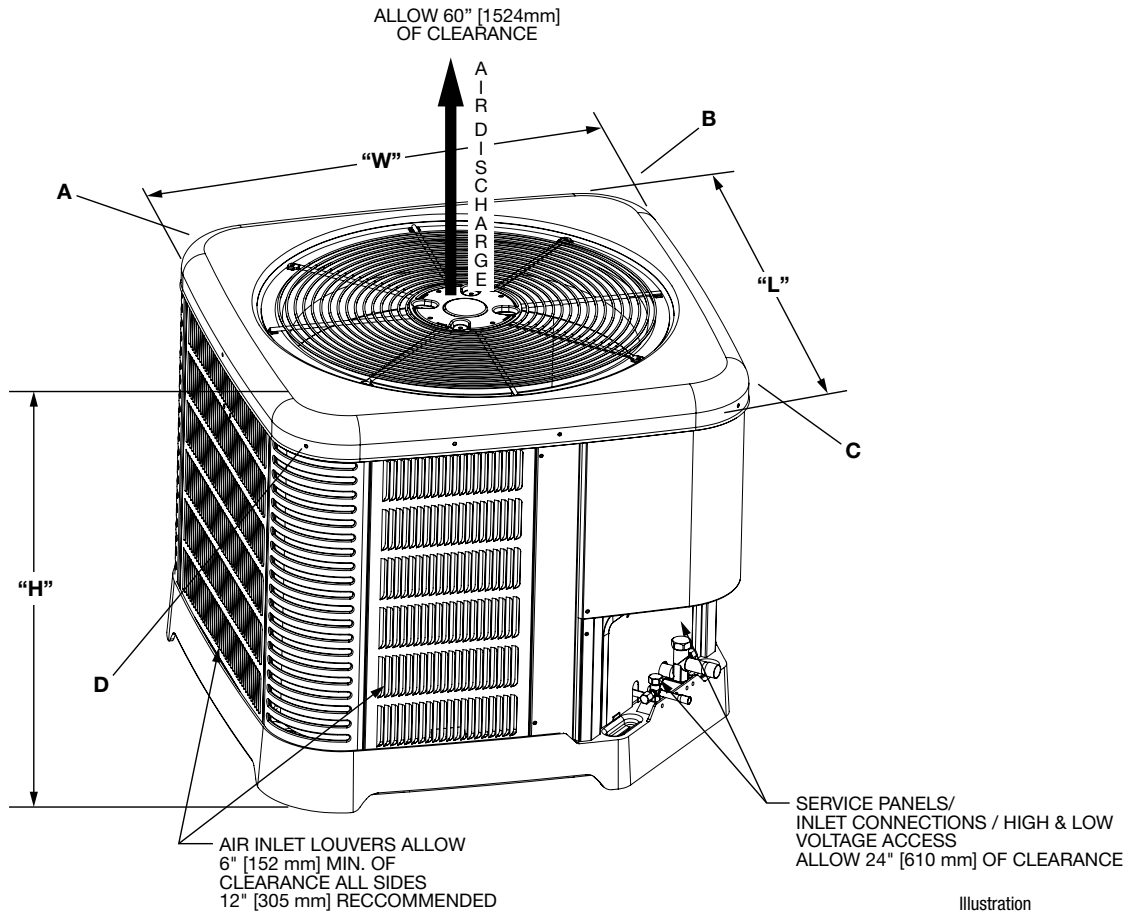
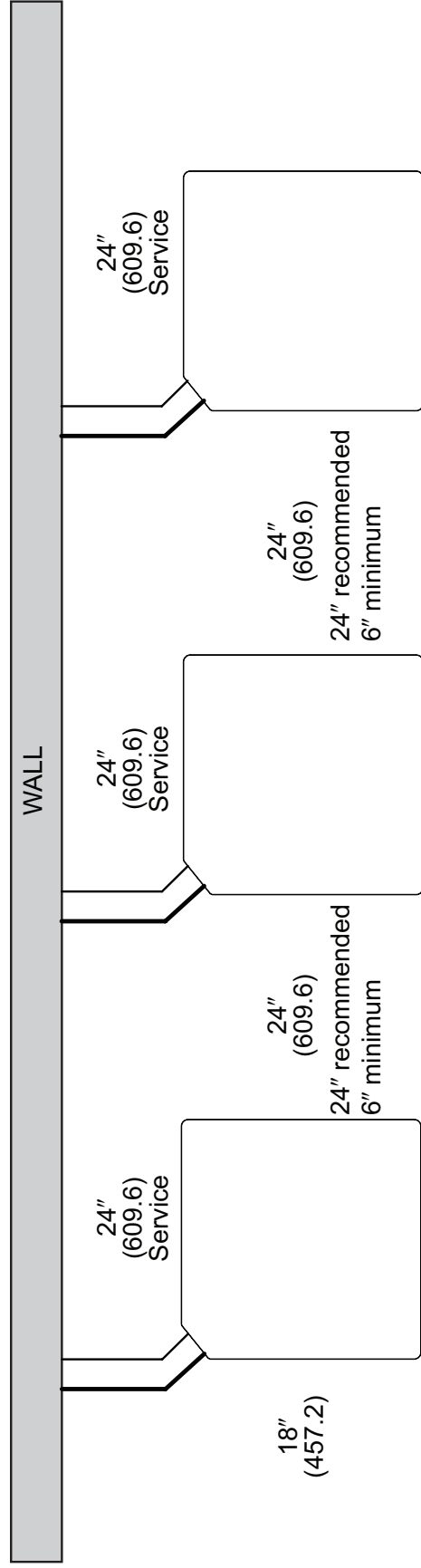
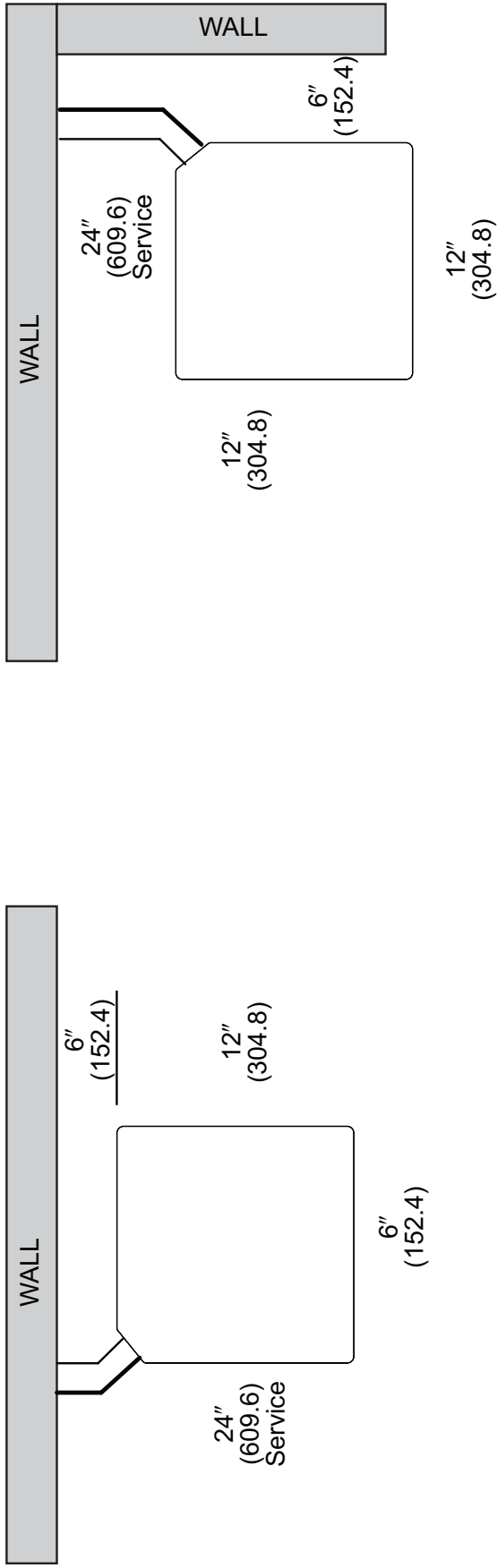


Illustration  
ST-A1348-01-00

[ ] Designates Metric Conversions

# CLEARANCES

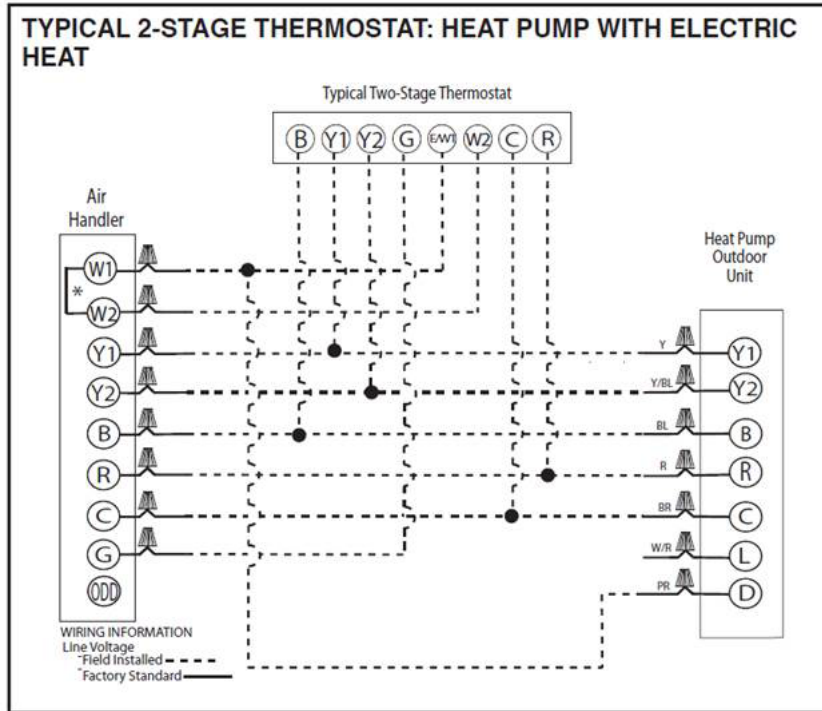


**NOTE: NUMBERS IN ( ) = mm**

**IMPORTANT:** When installing multiple units in an alcove, roof well or partially enclosed area, ensure there is adequate ventilation to prevent re-circulation of discharge air.



## Control Wiring



### Application Guidelines

1. Intended for outdoor installation with free air inlet and outlet. Outdoor fan external static pressure available is less than 0.01-in. wc.
2. Minimum outdoor operation air temperature for cooling mode without low-ambient operation accessory is 55°F (12.8°C).
3. Maximum outdoor operating air temperature is 125°F (51.7°C).
4. For reliable operation, unit should be level in all horizontal planes.
5. Use only copper wire for electric connections at unit. Aluminum and clad aluminum are not acceptable for the type of connector provided.
6. Do not apply capillary tube indoor coils to these units.
7. Factory-supplied filter drier must be installed.

## Refrigerant Line Size Information

18 SEER2 VARIABLE SPEED HEAT PUMPS								
UNIT SIZE	ALLOWABLE LIQUID LINE SIZE	ALLOWABLE VAPOR LINE SIZE	OUTDOOR UNIT ABOVE OR BELOW INDOOR UNIT EQUIVALENT LENGTH (FEET)					
			< 25	26-50	51-75	76-100	101-125	126-150
			MAXIMUM VERTICAL SEPARATION/CAPACITY MULTIPLIER					
2.0 TON *SEE NOTE 3	1/4"	5/8"	25/1.00	50/0.99	33/0.98	60/0.97	NR	NR
	5/16"	5/8"	25/1.00	50/0.99	50/0.98	50/0.97	50/0.96	50/0.95
	3/8"	5/8"	25/1.00	50/0.99	50/0.98	50/0.97	50/0.96	50/0.95
	1/4"	3/4**	25/1.00	50/1.00	33/0.99	60/0.99	NR	NR
	5/16"	3/4**	25/1.00	50/1.00	50/0.99	50/0.99	50/0.99	50/0.98
	3/8"	3/4**	25/1.00	50/1.00	50/0.99	50/0.99	50/0.99	50/0.98
3 TON	5/16"	5/8"	25/0.99	50/0.97	50/0.95	50/0.93	36/0.91	NR
	3/8"	5/8"	25/0.99	50/0.97	50/0.95	50/0.93	50/0.91	NR
	5/16"	3/4"	25/1.00	50/0.99	50/0.99	50/0.98	36/0.97	20/0.96
	3/8"	3/4"	25/1.00	50/0.99	50/0.99	50/0.98	50/0.97	50/0.96
	1/2"	3/4"	25/1.00	50/0.99	50/0.99	50/0.98	50/0.97	50/0.96
4 TON	3/8"	3/4"	25/0.99	50/0.98	50/0.96	50/0.95	50/0.93	50/0.92
	1/2"	3/4"	25/0.99	50/0.98	50/0.96	50/0.95	50/0.93	50/0.92
	3/8"	7/8"	25/1.00	50/0.99	50/0.99	50/0.98	50/0.98	50/0.97
	1/2"	7/8"	25/1.00	50/0.99	50/0.99	50/0.98	50/0.98	50/0.97
5 TON	3/8"	3/4"	25/0.98	50/0.97	50/0.95	50/0.93	46/0.91	NR
	1/2"	3/4"	25/0.98	50/0.97	50/0.95	50/0.93	50/0.91	NR
	3/8"	7/8"	25/0.99	50/0.99	50/0.98	50/0.97	50/0.96	38/0.95
	1/2"	7/8"	25/0.99	50/0.99	50/0.98	50/0.97	50/0.96	50/0.95
	3/8"	1-1/8**	25/1.00	50/1.00	50/1.00	50/0.99	50/0.99	38/0.99
	1/2"	1-1/8***	25/1.00	50/1.00	50/1.00	50/0.99	50/0.99	50/0.99

**NOTES:**

- 1) Do not exceed 150 ft. linear line length.
- 2) Do not exceed 50 ft. vertical separation between indoor and outdoor units.
- 3) \*3/4" vapor line should only be used for 2 ton systems if outdoor unit is below or at same level as indoor unit to assure proper oil return.
- 4) \*\*1-1/8" vapor line should only be used for 5 ton systems if outdoor unit is below or at same level as indoor unit to assure proper oil return.
- 5) Always use the smallest liquid line allowable to minimize refrigerant charge.
- 6) Applications shaded in light gray indicate capacity multipliers between 0.90 and 0.96 which are not recommended, but are allowed.
- 7) Applications shaded in dark gray are not recommended due to excessive liquid or suction pressure drop.

## Refrigerant Line Size Information (Con't.)

18 SEER2 VARIABLE SPEED HEAT PUMPS								
UNIT SIZE	ALLOWABLE LIQUID LINE SIZE	ALLOWABLE VAPOR LINE SIZE	OUTDOOR UNIT ABOVE OR BELOW INDOOR UNIT EQUIVALENT LENGTH (METERS)					
			< 8	9-15	16-23	24-30	31-38	39-46
			MAXIMUM VERTICAL SEPARATION/CAPACITY MULTIPLIER					
7.0 kW [2.0 TON] *SEE NOTE 3	6.35 [1/4]	15.88 [5/8]	8/1.00	15/0.99	10/0.98	20/0.97	NR	NR
	7.94 [5/16]	15.88 [5/8]	8/1.00	15/0.99	15/0.98	15/0.97	15/0.96	15/0.95
	9.53 [3/8]	15.88 [5/8]	8/1.00	15/0.99	15/0.98	15/0.97	15/0.96	15/0.95
	6.35 [1/4]	19.05 [3/4]	8/1.00	15/0.99	10/0.99	20/0.99	NR	NR
	7.94 [5/16]	19.05 [3/4]	8/1.00	15/0.99	15/0.99	15/0.99	15/0.99	15/0.98
	9.53 [3/8]	19.05 [3/4]	8/1.00	15/0.99	15/0.99	15/0.99	15/0.99	15/0.98
10.6 kW [3 TON]	7.94 [5/16]	15.88 [5/8]	8/0.99	15/0.97	15/0.95	15/0.93	11/0.91	NR
	9.53 [3/8]	15.88 [5/8]	8/0.99	15/0.97	15/0.95	15/0.93	15/0.91	NR
	7.94 [5/16]	19.05 [3/4]	8/1.00	15/0.99	15/0.99	15/0.98	11/0.97	6/0.96
	9.53 [3/8]	19.05 [3/4]	8/1.00	15/0.99	15/0.99	15/0.98	15/0.97	15/0.96
	12.70 [1/2]	19.05 [3/4]	8/1.00	15/0.99	15/0.99	15/0.98	15/0.97	15/0.96
14.1 kW [4 TON]	9.53 [3/8]	19.05 [3/4]	8/0.99	15/0.98	15/0.96	15/0.95	15/0.93	15/0.92
	12.70 [1/2]	19.05 [3/4]	8/0.99	15/0.98	15/0.96	15/0.95	15/0.93	15/0.92
	9.53 [3/8]	22.23 [7/8]	8/1.00	15/0.99	15/0.99	15/0.98	15/0.98	15/0.97
	12.70 [1/2]	22.23 [7/8]	8/1.00	15/0.99	15/0.99	15/0.98	15/0.98	15/0.97
17.6 kW [5 TON]	9.53 [3/8]	19.05 [3/4]	8/0.98	15/0.97	15/0.95	15/0.93	14/0.91	NR
	12.70 [1/2]	19.05 [3/4]	8/0.98	15/0.97	15/0.95	15/0.93	15/0.91	NR
	9.53 [3/8]	22.23 [7/8]	8/0.99	15/0.99	15/0.98	15/0.97	15/0.96	12/0.95
	12.70 [1/2]	22.23 [7/8]	8/0.99	15/0.99	15/0.98	15/0.97	15/0.96	15/0.95
	9.53 [3/8]	28.58 [1-1/8]**	8/1.00	15/0.99	15/0.99	15/0.99	15/0.99	12/0.99
	12.70 [1/2]	28.58 [1-1/8]**	8/1.00	15/0.99	15/0.99	15/0.99	15/0.99	15/0.99

**NOTES:**

- 1) Do not exceed 46 meters linear line length.
- 2) Do not exceed 15 meters vertical separation between indoor and outdoor units.
- 3) \*19.05mm [3/4"] vapor line should only be used for 2 ton systems if outdoor unit is below or at same level as indoor unit to assure proper oil return.
- 4) \*\*28.58mm [1-1/8"] vapor line should only be used for 5 ton systems if outdoor unit is below or at same level as indoor unit to assure proper oil return.
- 5) Always use the smallest liquid line allowable to minimize refrigerant charge.
- 6) Applications shaded in light gray indicate capacity multipliers between 0.90 and 0.96 which are not recommended, but are allowed.
- 7) Applications shaded in dark gray are not recommended due to excessive liquid or suction pressure drop.

## Performance Data @ AHRI Standard Conditions – Cooling

DESIGNATED TESTED COMBINATION (DTC)												
OUTDOOR UNIT	AIR HANDLER	TOTAL CAPACITY BTU/H [kW]	NET SENSIBLE BTU/H [kW]	NET LATENT BTU/H [kW]	SEER2	EER2	INDOOR CFM [L/s]	47 DEGREE HEATING CAPACITY BTU/H [kW]	47 DEGREE COP	17 DEGREE HEATING CAPACITY BTU/H [kW]	17 DEGREE COP	REGION IV HSPF2
FRP18AZ24AJVC	FRHMOVZ2421HEACA	22800 [6.7]	17500 [5.1]	5300 [1.6]	18.0	12.5	785 [370.5]	22800 [6.7]	3.00	23000 [6.7]	2.00	8.5
FRP18AZ36AJVC	FRHMOVZ6021SEACA	34200 [10.0]	26200 [7.7]	8000 [2.3]	18.0	12.5	1225 [578.1]	32000 [9.4]	3.00	37400 [11.0]	2.00	8.5
FRP18AZ48AJVC	FRHMOVZ6021SEACA	45800 [13.4]	34500 [10.1]	10500 [3.1]	18.0	12.0	1590 [750.4]	40000 [11.7]	2.50	41000 [12.0]	1.50	8.5
FRP18AZ60AJVC	FRHMOVZ6021SEACA	53000 [15.5]	40600 [11.9]	12400 [3.6]	18.0	10.5	1685 [795.2]	48500 [14.2]	2.50	47000 [13.8]	1.50	8.5

**NOTE:** This data includes DTC (Designated Test Combination) ratings and is for reference purposes only. A full listing of official ratings and system match-ups, along with downloadable certificates, can be accessed from the AHRI website: [www.ahridirectory.org](http://www.ahridirectory.org).

[ ] Designates Metric Conversions

## Integrated Controls



EcoNet® is smart, technology that allows Heating and Cooling, products to communicate with each other on one integrated network.

### THE ECONET® SMART THERMOSTAT

#### BUILT-IN WIFI

#### 4.3" LCD TOUCH SCREEN

**LOCAL WEATHER** – Current conditions plus 6-day forecast

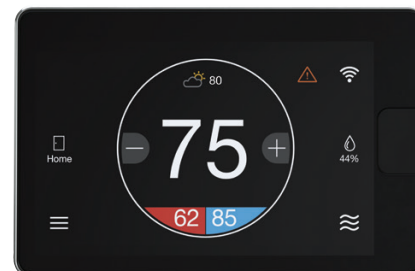
**5 OPERATING MODES** – Heat, Cool, Auto, Emergency Heat and Fan Only

**7-DAY PROGRAMMABLE SCHEDULE** – Offers comfort without thought

**ONE-TOUCH AWAY** – Quickly switch to your energy-saving away preferences

**VACATION SCHEDULING** – Allows you to save while you're away and come home to comfort

**STANDBY SCREEN** – Displays indoor temperature and current weather



**CETST800SYS**

### OPERATIONAL FEATURES

**AUTOMATIC CHANGEOVER** – Transitions between heating and cooling automatically to keep the house comfortable

**INTEGRATED WATER CONTROL** – Enables easy water heater management

**SMOOTH ARRIVAL** – Prompts the system to start ahead of schedule to ensure the home is at the desired temperature at the scheduled time

**HUMIDITY CONTROL** – Supports humidifier accessories or over-cool based dehumidification

**DETAILED OPERATING STATUS** – View pertinent equipment status information and run times

**CONTINUOUS FAN** – Offers 5 speeds (Low, Medium Low, Medium, Medium High, High)

**SHORT-CYCLE PROTECTION** – Avoids damage to equipment from short run cycles

### MONITORING & REMOTE CONTROL FEATURES

**ACTIVE MONITORING** – Alerts to problems that need immediate attention

**REMOTE CONTROL** – Allows adjusting of comfort and settings from anywhere using a mobile device

**SERVICE ALERTS** – Sends routine maintenance reminders

**AIR FILTER MONITORING** – Detects when it's time to replace the air filter

**ALARM HISTORY** – Displays time-stamped alarm codes with clear descriptions







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**GENERAL TERMS OF LIMITED WARRANTY\***

Friedrich® will furnish a replacement for any part of this product which fails in normal use and service within the applicable period stated, in accordance with the terms of the limited warranty.

**\*For complete details of the Limited and Conditional Warranties, including applicable terms and conditions, contact your local contractor or the Manufacturer for a copy of the product warranty certificate.**

Conditional Unit Replacement (Registration Required).....	Ten (10) Years
Parts .....	Ten (10) Years

**Before proceeding with installation, refer to installation instructions packaged with each model, as well as complying with all Federal, State, Provincial, and Local codes, regulations, and practices.**

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*In keeping with its policy of continuous progress and product improvement, Friedrich reserves the right to make changes without notice.*

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